



# Drainage Report Pitfalls

How to get a drainage report  
approved.

# Basis of Authority

- **Sec. 37-16 (a)** "It is the purpose of this article to establish requirements and regulations pertaining to the use and development of land in the city which will minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall."
- **Sec 37-21** "In the interpretation and application of this article, all provisions shall be:
  - (1) Considered as minimum requirements;
  - (2) Liberally construed in favor of the council; ..."
- **Sec 37-44** "No person in the city shall either obstruct or reduce the capacity of a watercourse, or of a pipe, conduit or any other conveyance through, on or over which storm waters flow at least periodically ... except as provided in this chapter."



# Resource

- Design Standards and Policy Manual (DS&PM) provides:
  - interpretation of City Ordinance.
  - submittal requirements.
  - updates on changing standards.
- Applicant/engineer must comply with latest version of DS&PM (July 2006).
  - Free online. Available in book or CD format.

# 1. Purpose of Drainage Report

- **Sec. 37–42:** “The purpose of the report is to analyze the effect that a proposed development would have upon the rainfall runoff in the vicinity of the development, to provide data to insure that the development is designed to be protected from flooding, to provide data to insure that the development is to be designed to minimize flooding and to provide data supporting the design of facilities to be constructed for the management of rainfall runoff... The complexity of the report depends upon the nature of the development and the site on which the development will occur.”



## 2. Required Items

- Appendix 4-A of the DS & PM.
  - ✓ Vicinity Map
  - ✓ Existing Conditions Map
  - ✓ Topographic Map of off-site Watershed
  - ✓ Topographic Map of Existing On-site conditions (2-ft contours)
  - ✓ Current Aerial Photo (800 scale min.)
  - ✓ Proposed Drainage Plan
- Appendix 4-B for Master Drainage Reports
- All submittals require the inclusion of electronic files for modeling software.

### 3. Referencing Prior Reports

- Include enough of prior report for review.
- Standards change; Model must meet current standards.
- Previous approval does not guarantee that it was correct.
- Confirm prior assumptions are appropriate.
- Engineer is certifying previous work.



## 4. Stormwater Storage Waivers

- Criteria are listed in Sec. 4.502 of the DS&PM.

- Demonstrate how project meets criterion.

1. Runoff stored in another facility

- “Demonstrate that the stormwater storage facility was specifically designed to accommodate runoff from the subject property and that the runoff will be conveyed to this location through an adequately designed conveyance facility.”

# 5. Underground Storage

- Demonstrate how underground storage meets code.
- **34-42 (L)(4):** "Stormwater storage facilities shall be maintained so as not to cause or contribute to the creation of a public nuisance as defined in section 37-60. At a minimum, maintenance shall include the removal of all debris and sediment from stormwater storage facilities immediately following a storm event."
- Floodplain Administrator determines when underground storage is appropriate.



## 6. Provide Sufficient Detail

- It is not enough to provide the answer. The report should document the process through which the answer was determined.
- Document the assumptions, data source, parameter selection, special considerations, constraints and conclusions made.

## 7. ESLO Constraints

- Watercourses to be natural and open.
- 50 cfs in an easement.
- 750 cfs in vista corridor.
- Wash modification requests are approved by the Zoning Administrator.



## 8. Modeling Consistency

- Parameters used in hydrologic models should be consistent with hydraulic models.
  - ✓ Roughness coefficients
  - ✓ Slope
  - ✓ Cross-section geometry
- Parameters should be consistent between different methods.
  - ✓ Rational coefficients should reflect HEC-1 coefficients.

## 9. Learn from prior submittals

- Address review comments that were received for a prior submittal.
- Use prior comments to improve in-house QA/QC
- Use City drainage review checklist.